Commonwealth of Kentucky
Division for Air Quality
REVISED

REVISED PERMIT STATEMENT OF BASIS

TITLE V RENEWAL (PROPOSED PERMIT) NO. V-06-014
KENTUCKY UTILITIES COMPANY
GREEN RIVER GENERATING STATION
CENTRAL CITY, KY 42330
JUNE 20, 2007
BEN MARKIN, REVIEWER

SOURCE I.D.:	021-177-00001
SOURCE A.I. #:	3228
ACTIVITY #:	APE20040002

SOURCE DESCRIPTION:

An application for the renewal of the Title V Operating Permit, V-97-045, for the Kentucky Utilities Company, Green River Generating Station was received on September 17, 2004. The renewed Title V Operating Permit will include the Phase II Acid Rain permit and NOx Budget permit for this source.

The Green River Generating Station is an electric power generation plant located on the banks of the Green River in Central City of Muhlenberg County, Kentucky. The station consists of two (2) coal-fired boilers, supplying steam to two (2) dedicated turbine-generators. The boilers are pulverized coal-fired (number two fuel oil for startup and stabilization), dry bottom, wall-fired type boilers. Boiler #4 and Boiler #5 are each equipped with an electrostatic precipitator for particulate control. Boilers #4 and #5 are also equipped with low NOx burners. Boilers #1, #2, and #3 were retired from operation in December 2003. These three units were collectively identified as Emission Unit 01(01) in initial TV Permit No. V-97-045 and in the KyEIS.

Coal is received by truck and is unloaded through the handling system at a maximum rate of 400 tons/hr. The coal is either diverted to an open storage pile or is transferred via conveyor to a crusher house. The crushed coal is then conveyed to coal storage bunkers for feed into the boiler #4 and #5 pulverizers. Coal can also be reclaimed from the open storage pile for transfer into the crusher house, so it can then proceed through the coal handling system. Wet suppression is applied to the open coal storage pile as necessary to control fugitive emissions.

The ash handling system removes the bottom ash and fly ash residuals from the combustion of coal. Bottom ash falls to the bottom of the boiler where it is collected in the boiler ash hoppers. Fly ash is captured in the electrostatic precipitator, the economizer and the air heater and is collected in each of these places through a hopper system. The ash (bottom and fly) collected in each of these hoppers is then sluiced (via a water jet system) to the ash treatment basin on site.

The permittee notified the Division on May 25, 2005 that the source discontinued the use of the lime handling operations and silo. This system, which was identified as Emission Unit 06(08) in the initial TV Permit No. V-97-045 and in the KyEIS, is removed from this renewal permit.

The Standard Industrial Classification (SIC) Code for electric generation is 4911. The source is classified as "major" by Kentucky and federal air permitting programs, 401 KAR 52 and 40 CFR 70, respectively.

There are no significant modifications to the facility for this Title V Operating Permit renewal.

COMMENTS:

(1) Emission Units: The following is a list of significant emission units at the facility:

(a) Emission Unit 03 (EP02): Coal-fired Boiler #4, Utilizing No. 2 Fuel Oil for Start-up and Stabilization- Unit #3
Description: Emission Unit 03 (EP02) is a pulverized coal-fired, dry bottom, wall-fired boiler that began operation in 1954. It provides steam for electric generating unit 3 which generates a net electrical output of 75 megawatts. The boiler has a design heat input rating of 976 mmBtu/hr. The flue gas is routed through an electrostatic precipitator to collect fly ash. The ESP was installed in 1973. Compliance with the applicable sulfur dioxide emission standard is met by utilizing reduced sulfur coal. Low-NOx burners were installed in 2002 to comply with the nitrogen oxides emission standard.

(b) Emission Unit 04 (EP03): Coal-fired Boiler #5, Utilizing No. 2 Fuel Oil for Start-up and Stabilization- Unit #4
Description: Emission Unit 04 (EP03) is a pulverized coal-fired, dry bottom, wall-fired boiler that began operation in 1959. It provides steam for electric generating unit 4 which generates a net electrical output of 105 megawatts. The boiler has a design heat input rating of 1,260 MMBtu/hr. The flue gas is routed through an electrostatic precipitator to collect fly ash. The ESP was installed in 1975. Compliance with the applicable sulfur dioxide emission standard is met by utilizing reduced sulfur coal. Low-NOx burners were installed in 1995 to comply with the nitrogen oxides emission standard.

(c) Emission Unit 05 (EP04, EP05, EP06 and EP07): Coal-Handling Operations
Description: The coal handling system includes unloading operations and coal receiving hopper, coal conveyor belts (A, B and C) and transfer points, coal crusher, coal stockpile operations, and haul roads. The coal-handling operations commenced before 1950.

(2) Refer to Section C of the permit for a list of the facility's insignificant activities.

(3) Emission Factors: The source's potential emissions of air pollutants are calculated based on emission factors provided in the Title V permit renewal application. Emission factors used are from (1) the U.S.EPA (AP-42), Chapter 1.1; (2) the Power Plant Integrated System: Chemical Emissions Study, Electric Power Research Institute (PISCES); and (3) the Kentucky Emission Inventory Statement.

(4) Applicable Regulations:

(a) This source is subject to the federal Phase II acid rain requirements for Emission Units 03 and 04. The federal acid rain rule requirements are codified in 40 CFR Parts 72 to 78, which are incorporated by reference in 401 KAR 52:060. The Division has issued a Phase II acid rain permit for the prevention, abatement, and control of air pollution. The two coal-fired boilers have NOx limits and averaging plans set by 40 CFR Part 76 for Phase I, Group 1 boilers (Boiler #5) and Phase II, Group 1 boilers (Boiler #4). The two boilers also have Phase II SO_2 allowances as listed in 40 CFR 73.10 for each year from 2000 to 2009, and 2010 and beyond. The SO_2 and NOx requirements, including continuous monitoring in accordance with 40 CFR Part 75, are incorporated into Section J of the permit.

(b) The two boilers are subject to 401 KAR 51:160, NOx requirements for large utility and industrial boilers, and 40 CFR 96, the NOx Budget Trading Program (incorporated in 401 KAR 51:190). Pursuant to 401 KAR 51:160, Section (5), the permittee is required to submit to the Division an application for a NOx Budget Permit, which will include established NOx emission limits and related program requirements contained in the federal NOx SIP Call. The application was received by the Division on November 29, 2004. Pursuant to 401 KAR 52:020, Section 3, the permittee shall operate in compliance with the applicable NOx Budget requirements, which are incorporated into Section K of the permit.

(c) The two boilers are subject to 401 KAR 61:015, *Existing indirect heat exchangers*, which is applicable to existing indirect heat exchangers with a capacity of 250 MMBtu/hr or greater and commencing before August 1971. Therefore, pursuant to 401 KAR 61:015, Section 4(1), Boiler #5 is subject to the allowable PM emission rate of 401 KAR 61:015, Section 4(1). As such, PM from Boiler #5 shall not exceed 0.14 lb/MMBtu actual heat input. The allowable emission rate is determined in accordance with 401 KAR 61:015, Section 3(1) based on the total rated heat input capacity of the two existing facilities, plus the three 309 MMBtu/hr boilers (Boiler #1, #2 and #3) retired during December 2003 (i.e., 3163 mmBtu/hr). Pursuant to 401 KAR 61:015, Section 3(2), the shutdown of the three boilers does not affect prior determinations for the two remaining units. Pursuant to 401 KAR 61:015, Section 4(4), the allowable limit for Boiler #4 is 0.29 lb/MMBtu actual heat input, since this unit was issued a valid permit under Regulation 7, *Prevention and Control of Emissions of Particulate Matter from Combustion of Fuel in Indirect Heat Exchangers*. The permittee may assure continuing compliance with the PM standards by operating the affected facilities and associated control equipment such that opacity does not exceed the upper limit of the indicator range developed from COM data.

Pursuant to 401 KAR 61:015 Section 4(3), emissions from each boiler shall not exceed (20) percent opacity with respect to PM except:

(1) That, for cyclone or pulverized fired indirect heat exchangers, a maximum of forty (40) percent opacity shall be permissible for not more than one (1) six (6) minute period in any sixty (60) consecutive minutes;

(2) For emissions from an indirect heat exchanger during building a new fire for the period required to bring the boiler up to operating conditions, provided the method used is that recommended by the manufacturer, and the time does not exceed the manufacturer's recommendations.

To meet the monitoring requirement for particulate, the permittee shall use a continuous opacity monitor (COM).

401 KAR 61:015, Section 5(1), applies to the operating and emission limitations for sulfur dioxide (SO_2). As such, emissions of SO_2 shall not exceed 4.57 lbs/mmBtu from Boiler #4 and Boiler #5, as established by the Division pursuant to 401 KAR 61:015, Section 3(3).

In accordance with 401 KAR 61:015, Section 6 (3) the rate of each fuel burned shall be measured daily and recorded. The heating value and ash content of fuels shall be ascertained and recorded at least once per week. The average electrical output and the minimum and maximum hourly generation rate shall be measured and recorded daily.

(d) Coal handling operations (Emission Unit 05) are subject to 401 KAR 63:010 for fugitive emissions. Such operations are considered to be in compliance when using control measures, including but not limited to application and maintenance of asphalt, application of water, or suitable chemicals on roads, material stockpiles, and other surfaces which can create airborne dusts, installation and use of hoods, fans, and fabric filters to enclose and vent the handling of dusty materials. No visible fugitive dust emissions shall be discharged beyond the property boundary.

(e) Boilers #4 and #5 are subject to the requirements of 40 CFR 64, Compliance Assurance Monitoring (CAM), for emissions of particulate matter. The facility submitted the requisite CAM plans for these emission units and their related control devices as part of the renewal application received on September 17, 2004. The related requirements are incorporated into the renewal permit.

(5) Non-Applicable Regulations:

The following regulations are not applicable to emission units 03 and 04 (boiler #4 and #5, respectively) due to applicability date of the regulation, the size (capacity) of the units, or for other reasons stated below. These determinations are consistent with those made by the Division during the initial Title V Operating Permit review.

(a) 401 KAR 59:015 (New Indirect Heat Exchangers), is not applicable because the boilers commenced prior to the rule classification date of August 17, 1971.

(b) 401 KAR 59:016 (New Electric Utility Generating Units), is not applicable because the boilers commenced prior to the rule classification date of September 19, 1978.

(c) 401 KAR 60:050, Section 3(1)(b) (Standard of Performance for New Stationary Sources), incorporating by reference 40 CFR 60 Subpart D. The requirements of 40 CFR 60 Subpart D are not included in the permit because this rule is not applicable to units constructed prior to August 17, 1971, and there have been no modification or reconstruction approvals issued to the source.

(d) 401 KAR 60:050, Section 3(1)(c) (Standard of Performance for Electric Utility Steam Generating Units), incorporating by reference 40 CFR 60 Subpart Da. The requirements of 40 CFR 60 Subpart Da are not included in the permit because this rule is not applicable to units constructed prior to September 18, 1978, and there have been no modification or reconstruction approvals issued to the source.

(e) 401 KAR 60:050 Section 3(1)(d) (Standards of Performance for Industrial, Commercial, Institutional Steam Generating Units), incorporating by reference 40 CFR 60 Subpart Db. The requirements of 40 CFR 60 Subpart Db are not included in the permit because this rule applies to a unit that commences construction, modification, or reconstruction after June 19, 1984, and that has a heat input capacity from fuels combusted in the steam generating unit of greater than 29 MW (100 million Btu/hour). The two boilers commenced prior to this rule applicability date and there have been no modification or reconstruction approvals issued to the source.

(f) 401 KAR 57:002 (NESHAP), incorporating by reference 40 CFR 63 Subpart DDDDD. Boilers #3 and #4 are not subject to the requirements of this regulation because they are fossil fuel-fired combustion units of more than 25 megawatts that serve a generator that produces electricity for sale.. .

(g) 401 KAR 60:250 (Standards of Performance for Coal Preparation Plants), incorporating by reference 40 CFR 60 Subpart Y, is not applicable to the Coal Crushing Facility (Emission Unit 05) because construction was commenced before October 24, 1974. This determination is consistent with that made by the Division during the initial Title V Operations Permit review for this unit.

EMISSION AND OPERATING CAPS DESCRIPTION:

There are no emissions or operating caps included in the permit.

MONITORING AND TESTING:

(1) Pursuant to 401 KAR 52:020, Section 10, 401 KAR 61:015, Section 6, 401 KAR 61:005, Section 3, 401 KAR 59:160 and 190, 40 CFR 60, 40 CFR 75, and 40 CFR 96, the installed continuous emission monitoring systems shall continue to be calibrated, maintained, and operated for measuring the opacity of emissions, sulfur dioxide emissions, nitrogen oxides emissions and either oxygen or carbon dioxide emissions. The owner or operator shall comply with and ensure the continuous emission monitoring systems are in compliance with the requirements of 401 KAR 61:005, Section 3.

(2) The permittee shall submit a schedule within six months from the date of issuance of this permit to conduct testing within one year following the issuance of this permit to establish the correlation between opacity and particulate emissions for boilers 4 and 5. This testing shall be conducted in accordance with 401 KAR 50:045, Performance Tests. Pursuant to 40 CFR 64.4(c)(1), the testing shall be conducted under conditions representative of maximum emissions potential under anticipated operating conditions at the pollutant-specific emissions unit.

(3) If no additional stack tests are performed pursuant to the specific monitoring requirements found in Section B of the permit for boilers 4 and 5, the permittee shall conduct a performance test for particulate emissions by the start of the fourth year of this permit to demonstrate compliance with the applicable standard.

(4) The permittee shall determine the opacity of stack emissions from boilers 4 and 5 by EPA Reference Method 9 every fourteen (14) boiler operating days, or more frequently if requested by the Division.

OPERATIONAL FLEXIBILITY:

The permittee has not proposed any alternate operating scenarios for any of the emissions units.

CREDIBLE EVIDENCE:

This permit contains provisions which require that specific test methods, monitoring or recordkeeping be used as a demonstration of compliance with permit limits. On February 24, 1997, the U.S. EPA promulgated revisions to the following federal regulations: 40 CFR Part 51, Sec. 51.212; 40 CFR Part 52, Sec. 52.12; 40 CFR Part 52, Sec. 52.30; 40 CFR Part 60, Sec. 60.11 and 40 CFR Part 61, Sec. 61.12, that allow the use of credible evidence to establish compliance with applicable requirements. At the issuance of this permit, Kentucky has only adopted the provisions of 40 CFR Part 60, Sec. 60.11 and 40 CFR Part 61, Sec. 61.12 into its air quality regulations.

PERMIT SUMMARY:

The following summarizes the permit requests and/or approvals during the term of initial Title V Permit No. V-97-045:

Permit Type	Issuance Date	Expiration Date	Summary of Action
V-97-045 (Title V)	03/22/2000	03/22/2005	Initial Title V
AR-96-013 (Acid Rain Permit)	1999	2000	Phase II Acid Rain Permit
A-98-017 (Acid Rain Permit)	03/08/1999 (Effective 01/01/2000)	12/31/2004	Final Phase II Acid Rain Permit
V-06-014 (Title V Renewal Permit w/ Acid Rain Permit and NOx Budget Permit)	Renewal	Same as renewal expiration	Title V Renewal Permit w/Acid Rain Permit and NOx Budget Permit